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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,284	10/15/2003	Edward Hin Pong Lee	HIT1P021/HSJ9-2003-0069US	7539
50535	7590	01/23/2006	EXAMINER	
ZILKA-KOTAB, PC P.O. BOX 721120 SAN JOSE, CA 95172-1120			CAO, ALLEN T	
			ART UNIT	PAPER NUMBER
			2652	
DATE MAILED: 01/23/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/687,284

Applicant(s)

LEE ET AL.

Examiner

Allen T. Cao

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 and 6-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al (US. 6,765,757 B2) in view of Chang et al (US. 6,542,331 B1). Kawasaki et al discloses a magnetic head having an air bearing surface including a first pole tip 19 having an upper end; a second pole tip 21 having a bottom end spaced apart from and facing the upper end of the first pole tip; and a bump 17 extending into a portion of the upper end of the first pole tip and a portion of the bottom end of the second pole tip, the bump being positioned away from the ABS, all as set forth in claims 1 and 25.

Regarding claim 2, Kawasaki et al discloses that the bump defines a throat height (Gd) of the first and second pole tips.

Regarding claim 7, Kawasaki et al discloses that the bump extends in a direction away from the ABS about to a back gap of the magnetic head.

Regarding claim 25, Official Notice has been taken that the write element structure or the magnetic structure including a sensor as described above or in Kawasaki et al is used for a magnetic storage system which includes a magnetic media (disk or disc), a head, a slider for supporting the head, and a control unit coupled to the head for controlling operation of the head.

However, Kawasaki et al does not disclose that the bump is extending in a direction towards the ABS with respect to the first pole and the bump also extending into a portion of the second pole tip as set forth in the amended claims 1 and 25.

Chang et al discloses a magnetic head having a bump (360 including 364; figure 15) extending into a portion of the first pole tip in a direction towards the ABS in the rectangular shape and the bump also extending into a portion of the second pole tip.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the bump of Kawasaki et al with the bump structure as set forth, supra as taught by Chang et al.

The rationale is as follows: One of ordinary skill in the art would have been motivated to modify the bump of Kawasaki et al with the bump structure as set forth, supra as taught by Chang et al to reduce the flux leakage between the magnetic poles in order to increase the magnetic flux frequency of the magnetic head, thus improve read/write characteristics of the head.

Regarding claims 13-14 and 24, Kawasaki et al as modified by Chang et al does not disclose that the bump is either formed by a dry process (claims 13 and 24) or deposition (claim 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the bump of Kawasaki et al as modified by Chang et al by a dry process or deposition as a result of routine engineering optimizing. Applicant has shown no criticality for such as any unexpected results deriving from such. Additionally, it is not found to be persuasive as a process limitation should only be

accorded weight to the extent that it affects the structure of the completed magnetic head since claims are directed to a "magnetic head", per se. Furthermore, it should be noted that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process, and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior art product was made by a different process", In re Thorpe, et al., 227 USPQ 964 (CAFC 1985). It should also be noted that a "[p]roduct-by process claim, although reciting subject matter of claim in terms of how it is made, is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", In re Hirao and Sato, 190 USPQ 685 (CCPA 1976).

Regarding claim 20, either Kawasaki et al or Chang et al discloses that the bump extends in a direction away from the ABS about to a back gap of the magnetic head.

Regarding claims 9-11, Kawasaki et al as modified by Chang et al only discloses that the bump is made of a nonmagnetic material or alumina; however, Kawasaki et al as modified by Chang et al does not disclose that the bump is electrically conductive (claim 11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the nonmagnetic bump of Kawasaki et al as modified by Chang et al with such material as set forth, as claimed in claim 11 to improve the flux density characteristics of the head, thus improve read/write characteristics. Additionally, it has been held to be within the general skill of a worker in

the art to select a known material having different chemical bonding structures on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416 (CCPA 1960).

Regarding claims 12 and 23, Kawasaki et al as modified by Chang et al does not disclose that the bump is formed by a cured resist process. Chang et al only discloses a photoresist process.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the bump of Kawasaki et al as modified by Chang et al by a cured resist process as a result of routine engineering optimizing. Applicant has shown no criticality for such as any unexpected results deriving from such. Additionally, it is not found to be persuasive as a process limitation should only be accorded weight to the extent that it affects the structure of the completed magnetic head since claims are directed to a "magnetic head", per se. Furthermore, it should be noted that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process, and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior art product was made by a different process", In re Thorpe, et al., 227 USPQ 964 (CAFC 1985). It should also be noted that a "[p]roduct-by process claim, although reciting subject matter of claim in terms of how it is made, is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", In re Hirao and Sato, 190 USPQ 685 (CCPA 1976).

Regarding claims 8 and 15, Chang et al inherently discloses that the bump is made of a nonmagnetic material (claims 8 and 15)/insulation or alumina/nonmagnetic metal (claims 9-10 and 21-22).

Kawasaki et al as modified by Chang et al only discloses that the bump is a half-circle/oval shape. Kawasaki et al does not disclose that the bump is a circular shape (claim 3), or an oval shape (claim 4), or "tapers together" (claim 6), or a "trapezoidal shape" (claim 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the half-circle/oval shape of the bump of Kawasaki et al as modified by Chang et al to either a circular shape (claims 3 and 16), or an oval shape (claims 4 and 17), or "tapers together" (claims 6 and 19) through a routine changing in well known shape which obvious to one of ordinary skill in the art in order to improve the throat height characteristics, thus improve read/write characteristics.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al and Chang et al as set forth and further in view of Sato (US. 6,683,750 B2).

Kawasaki et al as modified by Chang et al only discloses that the bump is a half-circle/oval shape. Kawasaki et al as modified by Chang et al does not disclose that the bump is a trapezoidal shape.

Sato discloses a magnetic head having a bump 45 which is a trapezoidal shape.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the half-circle/oval shape of the bump of Kawasaki et al

as modified by Chang et al to a trapezoidal shape as taught by Sato through a routine changing in well known shape which obvious to one of ordinary skill in the art in order to improve the throat height characteristics, thus improve read/write characteristics.

***Response to Arguments***

4. Applicant's arguments filed 11/10/05 have been fully considered but they are not persuasive.

5. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

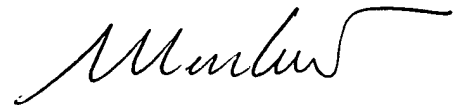


Applicant's amendment (claims 1 and 25; and Affidavits for claim 15) necessitated the new ground(s) of rejection.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen T. Cao whose telephone number is (571) 272-7569. The examiner can normally be reached on Mon - Thurs (7:30 - 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen Cao  
Primary Examiner

AC  
October 1, 2006